

The electronic supply includes a power electronics system and a control electronics system. Both systems can be inserted inside the motor housing, in the center of the stator yoke. The power electronics system is composed of an inverter with six Mosfets or multiple Mosfets which operate like six Mosfets. The structure diodes of the mosfets are used to ensure the current reversibility. At each sequence of conduction defined by the rotor position detector, two transistors are switched on to supply two motor phases. In the classical mode of operation, a modulation signal is applied on the gate of these two systems. Both systems can be inserted inside the motor housing, in the center of the stator yoke. The power electronics system is composed of an inverter with six Mosfets or multiple Mosfets which operate like six Mosfets. The structure diodes of the mosfets are used to ensure the current reversibility. At each sequence of conduction defined by the rotor position detector, two transistors are switched on to supply two motor phases. In the classical mode of operation, a modulation signal is applied on the gate of these two transistors. This method simplifies the control realization and only one current sensor can be inserted in the DC bus for the current measurement.

On Page 3, delete the first full paragraph and replace it with the following:

Another solution consists in applying the modulation signal on one transistor only at each sequence of operation: this method is a single switch modulation technique. The other transistor is switched "on" during all the duration of this sequence of conduction. An example of the single switch modulation is described in an article titled E.M.I. tests on a brushless actuator is described in Comparison of M. Lajoie-Mazene, J.P. Berry - European Power Electronics -

Brighton (U.K.), September 1993 (EMI Tests), in the case of motoring operation only, compared to the classical mode of operation where the modulation signal is applied on the gate of the two transistors. It is shown that the single switch modulation provides lower electromagnetic interferences (EMI and reduces the commutation losses, the conduction losses in low voltage applications, the current ripple and the size of the input filtering capacitor. The proposed electronic system is using the single switch modulation and it can be used for motor as well as generator operation. Consequently, the current regulation is realized without any external current sensor.

On Page 4, delete the first paragraph and replace it with the following:

Another feature of the invention is that the assembling of the rotor position sensor (i.e. Hall detectors) near the air gap is simplified by the winding configuration. The Hall detectors are fixed on the side of several teeth which have no winding and they are using the leakage flux of the permanent magnets to detect the rotor position. The amount of vibrations, the cogging torque ripple and the radial force are greatly reduced.

On Page 7, delete the second full paragraph and replace it with the following:

As shown in Fig's 3 and 4, a concentrated winding 22 is wound around the teeth 23. The advantages of a concentrated winding around the teeth in comparison with a classical distributed winding are described in Konecny U.S. Pat. No. 4,774,428 and the EMI Tests article referred to above. The volume of copper is reduced and subsequently the Joule losses are minimized. The energy efficiency and the motor starting torque per unit volume of winding are maximized.